

Revision of the European, North-African and Central Asian species of the genus *Norbanus* Walker 1843 (Hymenoptera: Pteromalidae)

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Abstract.—The European, North-African and Central Asian species of the genus *Norbanus* Walker are revised, providing an illustrated key to males and females of all the species. Three new synonymies are proposed: *Norbanus globulariae* (Szelényi 1941) = *Norbanus giordanii* (Ferrière 1952), **n. syn.**; *Norbanus meridionalis* (Masi 1922) = *Norbanus mordellidarum* Dzhanokmen 1999, **n. syn.**; *Norbanus obscurus* (Masi 1922) = *Norbanus erdoesi* (Szelényi 1974), **n. syn.** Both sexes of *N. guyoni* are redescribed, and its type locality clarified. A new host record together with distributional data are given for nine out of ten valid species.

The genus *Norbanus* Walker 1843 (Pteromalidae: Pteromalinae) consists of 38 species distributed all over the world, 13 of which have been described from the West and Central Palaearctic (Noyes 2003), and includes some of the largest Pteromalinae species (Dzhanokmen 1999).

So far, the species of *Norbanus* are mainly known as parasitoids of Cephidae (Hymenoptera), Curculionidae (Coleoptera) and occasionally Lepidoptera (Bouček and Rasplus 1991, Dzhanokmen 1999, Noyes 2003), but very little is known about the biology of most of the species and for many of them the host is unknown. *Norbanus scabriculus* (Nees 1834), was released in Canada for biological control of *Cephus pygmeus* (L.), a pest of wheat (Bouček and Rasplus 1991).

Already Graham (1969), in his review of the West Palearctic species of Pteromalinae, stated that the European species of the genus needed revision. With *Arthrolysis* Förster 1856 and *Picroscytus* Thomson 1878 placed in synonymy with *Norbanus* by Peck (in Muesebeck et al. 1951), Graham (1969) lists in his work 5 species of *Norbanus*: *N. scabriculus*, *N. meridionalis* (Masi 1922), *N.*

giordanii (Ferrière 1952), *N. globulariae* Szelényi (1941), and *N. albicrus* (Masi 1934). The latter was later placed in synonymy with *Cyrtotypus latipes* (Rondani 1874) (Pteromalidae) by Bouček (1974). However, Graham (1969) gives a key to females of only two *Norbanus* species, feeling uncertain as to the validity of the other species.

Five more *Norbanus* species were listed by the same author as *Picroscytoides* Masi 1922 (which was later placed in synonymy with *Norbanus* by Bouček (1990)): *N. cerasiops* (Masi 1922), *N. obscurus* (Masi 1922) and three unidentified species. He omitted *N. guyoni* (Giraud 1869), mentioned by Szelényi (1941) as *Arthrolysis guyoni*, and *N. calabrus* (Masi 1942), which Masi described as *Picroscytus calabrus*.

Later, Bouček (1969) described *N. laevis* and *N. albiventris* (as *Picroscytoides*), the latter being placed in synonymy with *N. calabrus* by Bouček (1990). Szelényi (1974) described *N. brevicornis* and *N. erdoesi* (the latter as *Picroscytoides*), and Bouček (1970) *N. tenuicornis*.

Then, Dzhanokmen (1999) in her review of the Kazakhstan species of *Norbanus*, separated two subgenera, *Norbanus* and

Picroscytoides, and mentions seven species, one of which being new: *N. (N.) mordellidarum* Dzhanokmen. Also, she provides a key to females and males of these species.

Thus, before this study, a comprehensive key to all the 13 species of *Norbanus* known in Europe, North Africa and Central Asia was lacking. Here we provide a revision of the genus and an illustrated key to males and females of all the valid species. Palearctic species of the genus comprise three more taxa, that we had not the opportunity to include in this study and will take into consideration in a further paper: *N. aiolomorphi* Yang and Wang 1993 and *N. arcuatus* Xiao and Huang 2001 from mainland China (Yang et al. 1993; Xiao and Huang 2001), and *N. ruschkae* (Masi 1927) from Taiwan.

MATERIAL AND METHODS

For the present revision we studied specimens of *Norbanus* from five European museums (whenever possible their types) and from the field. The examined material is deposited in the following institutions:

- GNHCM Genoa Natural History Civic Museum "G. Doria", Genoa, Italy;
- HNHM Hungarian Natural History Museum, Budapest, Hungary;

- MICO Mitroiu collection, Faculty of Biology, Alexandru Ioan Cuza University, Iași, Romania;
- MNHV Museum of Natural History of Venice, Venezia, Italy;
- NHM Natural History Museum, London, UK;
- NHMOV Natural History Museum, Vienna, Austria.

Norbanus Walker 1843

The genus *Norbanus* belongs to the group of Pteromalinae genera bearing two spurs on the hind tibia, and differs from *Merisus* Walker 1835 and *Homoporus* Thomson 1878 in having a prepectus smaller than the tegula (Graham 1969; Bouček and Rasplu 1991). The very similar *Anorbanus* Bouček 1990 should differ from *Norbanus* mainly by the rounded antennal clava (Bouček 1990).

In this study we maintained the subgeneric division proposed by Dzhanokmen (1999), even if the only diagnostic character which separates the two subgenera is the hind margin of the first tergite, near straight in subgenus *Norbanus* s. str. and three-lobed in subgenus *Picroscytoides* Masi.

KEY TO FEMALES

- 1 Hind margin of first tergite straight or slightly convex in posterior part (Fig. 1) (subgenus *Norbanus* s. str.) 2
- Hind margin of first tergite three-lobed (Fig. 2) (subgenus *Picroscytoides*) 6
- 2 (1) Forewing with basal cell completely bare; postmarginal vein much shorter than marginal vein (Fig. 3); rather minute species (usually less than 2 mm). *N. tenuicornis* Bouček
- Forewing with basal cell either bare with only basal vein pilose or moderately to extensively pilose; postmarginal vein at least as long as (but often clearly longer than) marginal vein (Fig. 5); more robust species 3
- 3 (2) Basal cell uniformly hairy (Fig. 4); antennal club before spicula either gradually becoming pointed or globose 4
- Basal cell completely bare or at most pilose in its distal half (Fig. 5, 6); antennal club before spicula always gradually becoming pointed, never globose 5
- 4 (3) Speculum present; antenna slender with all segments longer than wide, gradually becoming shorter towards antennal apex; club two-segmented, globose, ending

- with a thin spicula (Fig. 22); head transverse in dorsal view (Fig. 13)..... *N. meridionalis* (Masi)
- Speculum absent; antenna short, thickening towards apex, with segments from 3rd to 6th subquadrate; club in appearance unisegmented with segments fused; club pointed bearing a short stocky spicula (Fig. 19); head globose in dorsal view with large rounded temples (Fig. 7) *N. brevicornis* Széleányi
- 5 (3) Basal cell: few setae present on the basal vein and sometimes near it (Fig. 5); head strongly transverse in dorsal view, with eyes in lateral position and temples receding, $POL \leq OOL$ (Fig. 9) *N. scabriculus* (Nees)
- Basal cell hairy on the entire distal half (Fig. 6); head transverse but temples present and eyes in antero-lateral position; $POL \geq OOL$ (Fig. 10)..... *N. globulariae* (Széleányi)
- 6 (1) Gaster very long and narrow, more than 4 times as long as broad and about twice as long as head plus mesosoma together, orange with distal third black; very large species (more than 10 mm) *N. guyoni* (Giraud)
- Gaster much shorter and broader, at most about 3 times as long as broad and not much longer than head plus mesosoma together (Fig. 8), with at most its basal half orange; smaller species (up to 7 mm but usually less) 7
- 7 (6) Gena with strongly developed quadrangular lamina at base of mandible (Fig. 16) *N. calabrus* (Masi)
- Gena with at most slightly developed rounded lamina at base of mandible (Fig. 15) . 8
- 8 (7) Sculpture of head and mesosoma very shallow, effaced *N. laevis* (Bouček)
- Sculpture of head and mesosoma deep, not effaced 9
- 9 (8) Antenna with clear spicula (Fig. 20), yellowish, darker towards pedicellus, proximal part of flagellum hardly as broad as pedicellus; head about 1.9 as broad as long in dorsal view and slightly higher than wide in frontal view; head and mesosoma from coppery-green to blackish, eyes brownish; gaster brownish, always without any reddish-orange part *N. obscurus* (Masi)
- Antenna without clear spicula (cf. Fig. 17), dark, proximal part of flagellum broader than pedicellus; head about 2.1–2.2 as broad as long in dorsal view and slightly wider than high in frontal view; head bluish-black, mesosoma bluish, eyes reddish; gaster at most with basal half orange *N. cerasiops* (Masi)

KEY TO KNOWN MALES

(characteristics that are not illustrated are similar to females)

- 1 Hind margin of first tergite straight or slightly convex in posterior part (subgenus *Norbanus* s. str.) 2
- Hind margin of first tergite three-lobed (subgenus *Picroscytoides*) 6
- 2 (1) Basal cell uniformly hairy; antennae either with pedicellate funicular segments with whorls of setae (Fig. 18) or with wider segments, covered by very dense short setae (Figs 17, 21) 3
- Basal cell completely bare or at most pilose in its distal half; antenna always with pedicellate funicular segments with whorls of setae 4
- 3 (2) Speculum present; head transverse in dorsal view (Fig. 11); antenna with pedicellate funicular segments with whorls of setae (Fig. 18) *N. meridionalis* (Masi)
- Speculum absent; head globose in dorsal view with large rounded temples; antenna with wider segments, covered by very dense short setae. *N. brevicornis* Széleányi

- 4 (2) Basal cell: few setae present on the basal vein and sometimes near it; head strongly transverse in dorsal view, with eyes in lateral position and temples receding, $POL \leq OOL$ *N. scabriculus* (Nees)
- Basal cell hairy on the entire distal half; head transverse, but temples present and eyes in antero-lateral position; $POL \geq OOL$ *N. globulariae* (Szelényi)
- 6 (1) Gaster mostly orange; antenna with pedicellate funicular segments with whorls of setae 7
- Gaster blackish, at most slightly paler basally; antenna with wide segments, covered by very dense short setae 8
- 7 (6) Base of gaster, next to petiole, orange, only tip black; antenna shorter, pedicellus plus flagellum only about 1.2 times as long as width of head; tibia entirely yellow ...
..... *N. guyoni* (Giraud)
- Both base and tip of gaster black; antenna longer, pedicellus plus flagellum 1.5 times as long as width of head; tibia infuscated medially *N. calabrus* (Masi)
- 8 (6) Antenna with pedicellus plus flagellum shorter than head width; head about 2.1–2.2 as broad as long in dorsal view (Fig. 12); head bluish-black, mesosoma bluish, eyes reddish *N. cerasiops* (Masi)
- Antenna with pedicellus plus flagellum longer than head width (Fig. 21); head about 1.9 as broad as long in dorsal view (Fig. 14); head and mesosoma dark green, eyes brownish *N. obscurus* (Masi)

Subgenus *Norbanus* s. str.

Norbanus (*Norbanus*) *brevicornis* Szelényi (Figs 7, 19)

Norbanus brevicornis Szelényi, 1974.

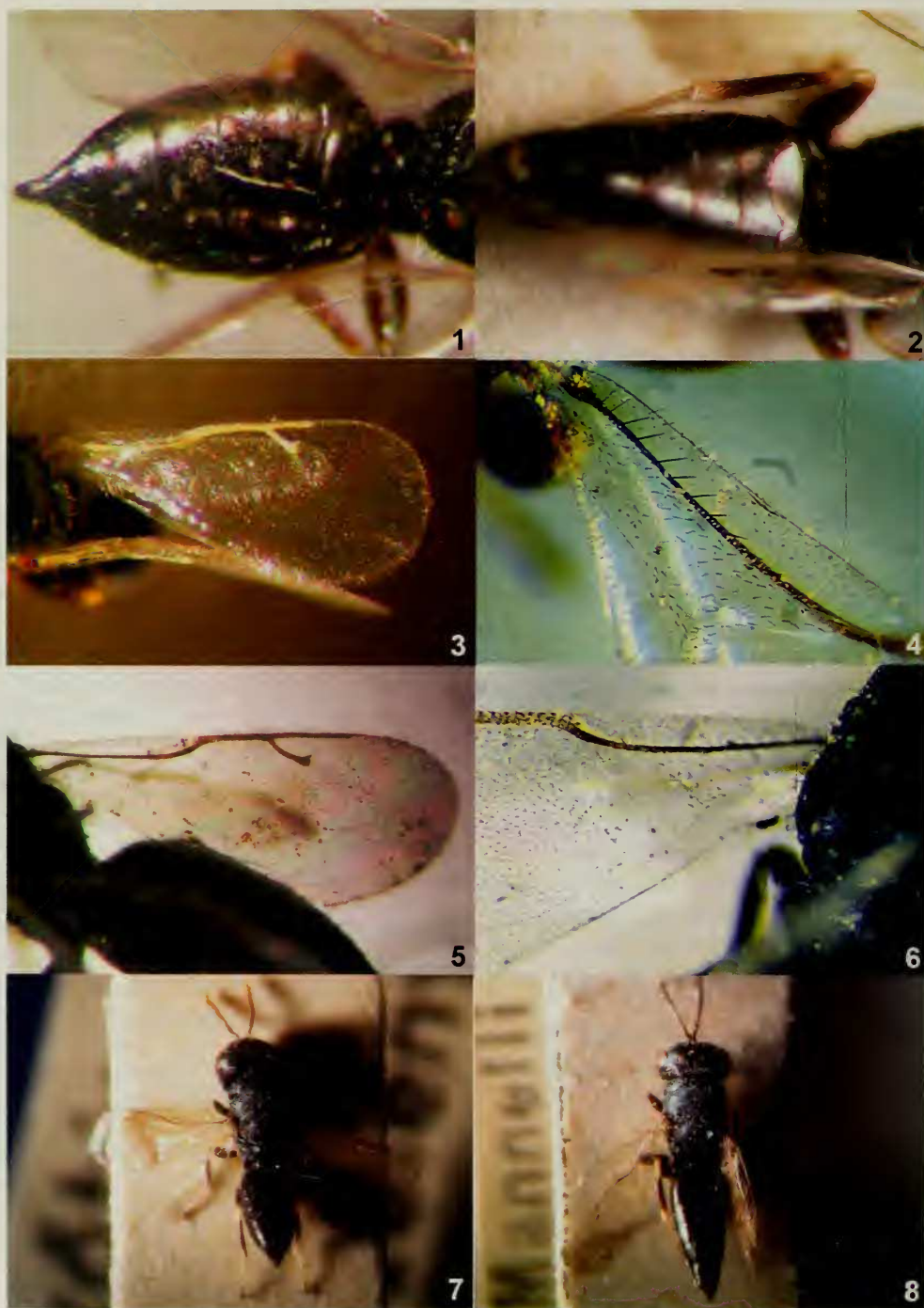
Diagnosis.—The species can be easily distinguished from all the other species of *Norbanus* by its large, globose head with large rounded temples, short antennae and entirely pilose fore wings (cf. Figs 7, 19); in males, the antennae are covered with very dense short setae.

Distribution.—Hungary (Szelényi 1974). Previously unrecorded for Croatia, Greece, France and Romania.

Biology.—Unknown.

Material examined.—**Type material:** HNHM: 1♀ 'Mezőtúr, 20.VIII.1966, leg. Szelényi', '10484', '*Norbanus brevicornis* sp. n. det. Dr. Szelényi 1', 'Holotypus *Norbanus brevicornis* Szelényi', 'Hym. Typ. No. 4253 Mus. Budapest'. **Additional material:** NHM: 1♂ '*Picroscytoides obscurus* Masi, det. Z. Bouček 1987', 'Jugoslavia, Jadran Biograd n/m Bouček 11.VII.1965'; 1♂ '*Picroscytoides obscurus* Masi, det. Z. Bouček 1980', 'Greece, Pelop. Olympia, 6.VII.79 M.C. Day'. The following specimens are part of Graham's collection, bearing the same registra-

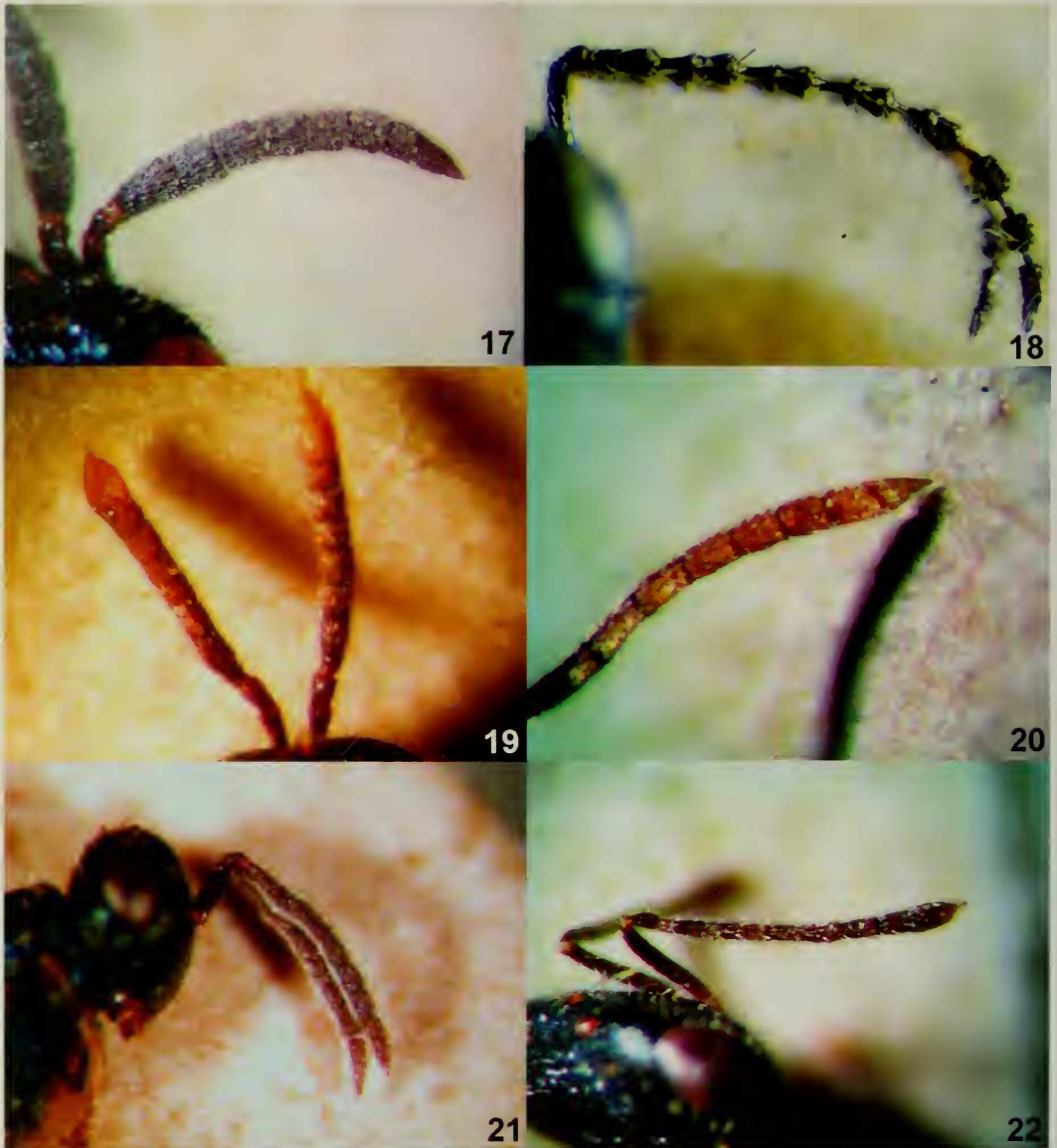
tion label: 'M. W. R. de V. Graham coll., BMNH(E) 1995-489' (exceptions indicated): 1♀ '*Norbanus brevicornis* Szel.', 'France: Vaucluse nr. Bèdoin, 9.VII.1983; 1♀ same locality, 23.VI.1986; 1♀ same locality, 28.VI.1985; 1♀ same locality, 29.VII.1979; 1♀ same locality, 29.V.1985; 1♀ same locality, 28.V.1982; 1♀ same locality, 28.VI.1986; 1♀ same locality, 15.VII.1981; 1♀ same locality, 11.VII.1980; 1♂ '*brevicornis* subgen. *Masioscytus* Masi', 'France: Vaucluse nr. Bèdoin, 21.V.1982; 1♂ same locality, 18.VII.1980, Les Constants; 1♂ same locality, 8.VII.1986; 1♂ same locality, 25.V.1982; 2♂ same locality, 22.VII.1981; 1♂ same locality, 3.VI.1985; 1♂ same locality, 10.VI.1985; 1♂ same locality, 15.VII.1981; 1♂ 'France, Vaucluse, Roussillon, 22.VI.1977' (no registration label); 1♂ 'Fme de Buar nr. Sault 10.VIII.79', 'France, Vaucluse, M. de V. Graham', 'M. de V. Graham BMNH 1983-2'; 2♂ 'France: Drôme, Col de Macuègne, 7.VIII.1975'; 1♂ 'France, B du Rhone, Fonscolombe, 10.VIII.1983'; 1♂ 'France: Dordogne Sarlat distr., nr. St. André d'Allas, 3.VIII.1974'. **MICO:** 1♀ '*Norbanus brevicornis* Szel. ♀, det. M. Mitroiu 2008', 'Greece, Kerkini, 20–26.VI.06 Malaise trap / N = 41°08'15.6; E = 023°13'01.2, Gordon Ramel leg.'; 2♀ '*Norbanus brevicornis* Szel. ♀, det. M. Mitroiu 2008', 'Romania, IS, Rez. Nat. Valea lui David 31.VII.1999, M.-D. Mitroiu leg.'.



Figs 1–8. 1. *N. scabriculus* hind margin of the first tergite straight, ♀; 2. *N. calabrus* hind margin of the first tergite three-lobed, ♀ holotype; 3. *N. tenuicornis* postmarginal vein much shorter than marginal vein, ♀; 4. *N. meridionalis* basal cell uniformly hairy, ♀ paralectotype; 5. *N. scabriculus* basal cell completely bare and postmarginal vein longer than marginal vein, ♀; 6. *N. globulariae* basal cell pilose in its distal half, ♀; 7. *N. brevicornis* habitus showing the head globose in dorsal view, ♀ holotype; 8. *N. calabrus* habitus, ♀ holotype.



Figs 9–16. 9. *N. scabriculus* head in dorsal view, ♀; 10. *N. globulariae* head in dorsal view, ♀ holotype; 11. *N. meridionalis* head transverse in dorsal view, ♂ paralectotype; 12. *N. cerasiops* head in dorsal view, ♂ syntype; 13. *N. meridionalis* head transverse in dorsal view, ♀; 14. *N. obscurus* head in dorsal view, ♂ paralectotype; 15. *N. obscurus* gena with rounded lamina, ♀ paralectotype; 16. *N. calabrus* gena with quadrangular lamina, ♀ holotype.



Figs 17–22. 17. *N. cerasiops* antenna ending without a clear spicula, ♂ syntype; 18. *N. meridionalis* antenna, ♂ paralectotype; 19. *N. brevicornis* antennae, ♀ holotype; 20. *N. obscurus* antenna ending with a spicula, ♀ paralectotype; 21. *N. obscurus* antennae, ♂ paralectotype; 22. *N. meridionalis* antenna with a two-segmented globose club, ♀ paralectotype.

Norbanus (Norbanus) globulariae
(Szelényi)
(Figs 6, 10)

Picroscytus globulariae Szelényi 1941.

Norbanus globulariae (Szelényi 1941), Graham (1969).

Picroscytus giordanii Ferrière 1952.

Norbanus giordanii (Ferrière), Graham (1969);
n. syn.

New synonymy.—In his description of *Picroscytus giordanii*, Ferrière (1952) compares his species with both *Norbanus* (= *Picroscytus*) *meridionalis* (Masi 1922) and *Norbanus* (= *Picroscytus*) *globulariae*. He

didn't see Szelényi's type material but mainly refers to proportions between marginal, postmarginal and stigmal veins given for both the other two species by Szelényi (1941) himself. Ferrière thought that his species had the postmarginal vein proportionally shorter than the others, and also lists some colour differences in antennae and hind tibiae. Studying type material of both *N. globulariae* and *N. giordanii* we found overlapping proportions in fore wing venation and that other differences are inconsistent. Thus, *N. giordanii* is considered a junior synonym of *N. globulariae*.

Diagnosis.—The species is very close to *N. scabriculus* (Nees), from which it differs mainly in having the basal cell hairy on the entire distal half (cf. Fig. 6).

Distribution.—Hungary, Italy (Szelényi 1941, Ferrière 1952). Previously unrecorded for France and Romania.

Biology.—The species was reared as a primary parasitoid of *Stigmatophora albia-picella* H. S. (Lepidoptera: Momphidae) from flower heads of *Globularia willkommii* Nym. (Graham 1969; Herting 1975). It also appears to be associated with flower heads of *Centaurea scabiosa* L., as one of the records below shows.

Material examined.—**Type material:** HNHM: 1♀ 'Budapest 1937 III/22 dr. Szelényi', 'E floribus Globulariae Willkommii', 'Picroscytus globulariae n. sp. Det. Szelényi', 'Typus', 'Cotypus Picroscytus globulariae Szel.', 'Hym. Typ. No. 2523 Mus. Budapest', Hungarian Natural History Museum Budapest'. MNHV: 1♀ '1709 Laguna veneta', 'Ricerche lagunari 1944-48', 'Staz. terr. N. 350', 'Giordani Soika', 'Picroscytus', 'giordanii sp. n. ♀', 'Cotype Ferrière', 'Paratypus'; 1♂ '1710 Laguna veneta', 'Ricerche lagunari 1944-48', 'Staz. terr. N. 168', 'Giordani Soika', 'Picroscytus', 'giordanii sp. n. ♂', 'Cotype Ferrière', 'Paratypus'; 1♂ '1711 Laguna veneta', 'Ricerche lagunari 1944-48', 'Staz. terr. N. 455', 'Giordani Soika', 'Picroscytus', 'giordanii sp. n. ♂', 'Cotype Ferrière', 'Paratypus'. **Additional material:** NHM: 1♀ 'globulariae (Szel.)', 'France: Drôme, Col de Macuègne, ex Cent. scabiosa head em. 16.IX.1989', 'M. W. R. de V. Graham coll., BMNH(E) 1995-489'. MICO:

1♀ 'Norbanus globulariae (Szel.) ♀, det. M. Mitroiu 08', 'Romania, CT, R.N. Valul lui Traian, 16.V.2007, leg. L. Fusu'.

***Norbanus (Norbanus) meridionalis* (Masi)**
(Figs 4, 11, 13, 18, 22)

Picroscytus meridionalis Masi 1922.

Norbanus meridionalis (Masi 1922), Graham (1969).

Norbanus (Norbanus) mordellidarum Dzhanokmen 1999; n. syn.

New synonymy.—Dzhanokmen (1999) described her *N. (N.) mordellidarum* mainly on the base of its characteristic fore wing venation and antennae (hairy basal cell, presence of speculum and bisegmented globose club), which well separated her species from both *N. (Norbanus) scabriculus* (Nees) and *N. (N.) brevicornis*. However, Dzhanokmen did not know Masi's paper, nor had she seen *N. (N.) meridionalis* type material. Our comparison of type material of *N. (N.) mordellidarum* and *N. (N.) meridionalis* showed that they are the same species, thus the former becomes a junior synonym of the latter.

Diagnosis.—The species can be distinguished from the other species of the genus by the fore wings with uniformly hairy basal cell and distinct speculum (cf. Fig. 4), thin antennae with long segments and the club being globose before the spicula, and transverse head (cf. Figs 11, 13, 22); in males the antennae have pedicellate funicular segments, with whorls of setae (cf. Fig. 18).

Distribution.—Hungary, Italy, Kazakhstan, Slovakia, Spain, Sweden (Noyes 2003). Previously unrecorded for Cyprus, France and Romania.

Biology.—The species was recorded from *Cephus pygmeus* (L.) (Hymenoptera: Cephidae) (Zhasanov 1986) and from some unknown Mordellidae (Coleoptera) on *Silene odoratissima* Bge. (Dzhanokmen 1999).

Material examined.—**Type material.** GNHCM: 1♀, 1 ♂ 'Paralectotype', 'Paralectotypus Picros-

cytus meridionalis Masi, 1922 Bouček det. 1970', 'CoTypus', 'Is. Giglio, VII.1902, G. Doria', 'Museo Civico di Genova'; 7♀ 'Paralectotype', 'PLT ♀ Picroscytus meridionalis Masi Det. Z. Bouček 1990', same locality and data. **NHM**: 'S-E Kazakhstan, S Taukumov, Dzhankmen 21.V.77 / from Mordellidae on Silene odoratissima Bge' [in Russian], 'HOLOTYPE ♀ Norbanus mordellidarum Dzhankmen', 'NHM(E) 1999-194', 'B.M. TYPE HYM 5.4114'. **Additional material**. **NHM**: 1♂ 'Norbanus meridionalis Masi', 'Cyprus: Limassol., 23.V.1934, G. A. Mavromoustakis, BM 1935-55', 'British Museum Loan No. 7214'. The following specimens are part of Graham's collection bearing the same registration label: 'M. W. R. de V. Graham coll., BMNH(E) 1995-489': 1♀ '? meridionalis M.', 'France: Vaucluse N. of Saumane, Grange Neuve, 16.VII.1981'; 1♀ 'near meridionalis Masi', 'France: B. du Rhone Nr. Rognes, 16.VII.1979'; 1♀ 'France: Drôme, Col de Macuègne, 21.VIII.1986'; 1♀ 'France: Drôme, La Poët-en-Percip, 24.VII.1994'. **NHNV**: 1♀ 'Is. Giglio, VII.1901', 'Arthrolysis scabricula (Nees) det. Masi'. **MICO**: 1♀ 'Norbanus meridionalis (M.) ♀, det. M. Mitroiu 2008', 'Rez. Agigea, 21.VI.2000, leg. L. Fusu'; 1♀ 'Norbanus meridionalis (M.) ♀, det. M. Mitroiu 2008', 'Romania: P.N. Măcin, fânaț, capc. Malaise, 23-25.VII.04'; 2♂ 'Norbanus meridionalis (M.) ♂, det. M. Mitroiu 2008', 'RO, CT, R.N. Canaraua Fetii, 16.V.2005, leg. Fusu, Popovici'.

Norbanus (Norbanus) scabriculus (Nees)
(Figs 1, 5, 9)

Pteromalus scabriculus Nees 1834.

Arthrolysis scabricula (Nees 1834), Giraud (1870).

Dimachus (Picroscytus) scabriculus (Nees 1834), Thomson (1878).

Picroscytus scabriculus (Nees 1834), Masi (1922).

Norbanus scabriculus (Nees 1834), Peck (1963).

Norbanus (Norbanus) scabriculus (Nees 1834), Dzhankmen (1999).

Diagnosis.—The species is characterized by a glabrous or almost glabrous basal cell, with a few setae present on the basal vein, occasionally a few more near it (cf. Fig. 5), thin antennae with club gradually becoming pointed, and strongly transverse head (cf. Fig. 9); in males the antennae have

pedicellate funicular segments bearing whorls of setae.

Distribution.—Azerbaijan, Canada, Croatia, Czech Republic, Germany, Hungary, Italy, Kazakhstan, Montenegro, Netherlands, Republic of Moldavia, Romania, Russia, Slovakia, Spain, Sweden, Ukraine (Noyes 2003). Previously unrecorded for Austria, France, Slovenia and United Kingdom (England).

Biology.—According to references traced via Noyes (2003), the species has been recorded as a primary parasitoid from *Agapanthia violacea* (F.) (Coleoptera: Cerambycidae), *Lixus juncii* Boh. (Coleoptera: Curculionidae), *Cephus pygmeus* (L.) (Hymenoptera: Cephidae) and *Trachelus tabidus* (F.) (Hymenoptera: Tenthredinidae).

Material examined.—**NHM**: 1♂ 'Norbanus scabriculus (Nees), Det. Z. Bouček 1958', 'Rec. in exchange from National Museum Prague, B.M. 1958-342', 'Bohemia or. Velky Vřeštov 25.VI.53 Bouček'; 2♂, 9♀ 'Picroscytus scabriculus Ns., Ch. Ferrière det.', 'Reared from wheat stubble', 'Pres. by Imp. Inst. Ent. B.M. 1935-462', 'Farnham Royal, England, 1935.6.'; 1♂ 'Norbanus scabriculus (Nees), det. Z. Bouček 1975, "no type!", 'Psilocera verticillata Foerster' (Waterhouse label), 'France', 'cynips aterrima ♂ Schrank'; 2♀ 'Norbanus scabriculus (Nees) ♀, Det. Z. Bouček 1958', 'Rec. in exchange from National Museum Prague, B.M. 1958-342', 'Boh. c.: Praha-Ruzyn, Bouček 25.VII.53'; 1♀ 'Ex. Cephus pygmaeus L.', 'Cambridge 1938', 'D. Berryman'. The following specimens are part of Graham's collection, bearing the same registration label: 'M. W. R. de V. Graham coll., BMNH(E) 1995-489': 1♀ 'France: Vaucluse, Mt. Ventoux, Col de Perrache, 8.VIII.1988'; 1♀, 2♂ same locality, 21.VII.1981; 1♀ same locality, 18.VII.1983; 1♂ same locality, 31.VII.1981; 2♂ same locality, 16.VI.1982; 1♂ same locality, 26.VI.1977; 1♀ '♀ Fits Nees' des. of scabriculus', 'gena not margined', 'France: Vaucluse nr. Bédoin, 15.VIII.1981'; 1♀ same locality, 7.VIII.1986; 1♂ same locality, 9.VI.1982; 1♀, 3♂ 'France: Vaucluse, Mt. Ventoux, Massif des Cédres, 11.VIII.1976'; 1♂ 'France: Vaucluse, Malaucène, Combe de Vaux, 8.VIII.1981'; 2♀, 1♂ 'France: Vaucluse, Roussillon, 9.VIII.1979'; 1♀, 1♂ same locality, 24.VII.1988; 2♂ same

locality, 16.VII.1988; 1♂ 'France: Vaucluse, 1 km S. of St. Gens nr. Beauset, 28.VI.1994'; 1♂ 'France: Vaucluse, nr. St. Didier, 19.VII.1986'; 2♂ 'France: Vaucluse, Malaucène, Crête de St. Armand, 11.VII.1978'; 1♀ 'France: Vaucluse, St. Pierre de Vassols, 23.VII.1977'; 1♀ same locality, 11.VIII.1976; 1♀ 'France: Vaucluse, Dentelles de Montmirail, 4.VIII.1975'; 1♂ 'France: Vaucluse, Grange Neuve, 13.VI.1994'; 1♂ 'France: Vaucluse, St. Didier, 20.8.92'; 1♀ 'France: Drôme, La Poët-en-Percip, 22.VII.1992'; 1♀ same locality, 25.VI.1991; 1♀ 'France: Drôme, Col de Macuègne, 18.VII.1991, Pastinaca'; 1♀ 'meridionalis Masi', same locality, 7.VIII.1975; 1♂ same locality, 13.VIII.1983; 1♂ same locality, 21.VIII.1986; 1♂ same locality, 1.VIII.1979; 1♀, 1♂ 'France: Drôme, Col de l'Homme Mort, 22.VII.1990'; 1♂ same locality, 4.VII.1990; 1♂ same locality, 18.VIII.1990; 1♂ 'France: Alpes de Haute Prov., Redortiers, 12.VII.1988'; 1♂ same locality, 15.VII.1986; 1♀ 'France: B/Rhône, La Crau, near Mas St. Claude, 3.VII.1991'; 1♂ 'France: Gard, Causse de Blandas, 8.VIII.1984'; 1♀ 'Picroscytus ?meridionalis', near syntypes of meridionalis, 17.3.70', 'Slovakia, Šturova, bank of Danube, 22.7.1963'; 1♂ 'Czechoslovakia: Slovakia: Kovačovské Kopce, 7.VI.1958 Hoffer'. **NHMHV**: 1♀ 'Weiden a. Neusiedl. See 12.VII.1914 Ruschka leg.', 'Norbanus scabriculus (Nees) det. Z. Bouček 1956'; 1♀ 'Collect. G. Mayr', 'Pter. Scabriculus N. det. Förster', 'Micr. Praep.', 'Pteromalus scabriculus Nees Or. Es.', 1♀ '7.V.16 Pfaffstätten', 'Umg. Wien leg. Ruschka', 'P. scabriculus N. det. Ruschka 19'; 2♀ 'Tolmein', 'Collect. Graeffe', 'Pteromalus scabriculus N. ♀ det. Ruschka 1919'. **MICO**: 1♀ 'Norbanus scabriculus (Nees) ♀, det. M. Mitroiu 2008', 'RO, CT, R.N. Agigea, 9.VII.00, leg. I. Popescu'; 1♂ 'Norbanus scabriculus (Nees) ♂, det. M. Mitroiu 2008', same locality, 4.VII.2000, leg. I. Popescu; 1♀ 'Norbanus scabriculus (Nees) ♀, det. M. Mitroiu 2008', 'RO, IS, R.N. Valea lui David, 6.VIII.2000, leg. M. Mitroiu'; 2♀ 'Norbanus scabriculus (Nees) ♀, det. M. Mitroiu 2008', same locality, 5.VIII.1999, leg. M. Mitroiu.

***Norbanus (Norbanus) tenuicornis* Bouček**
(Fig. 3)

Norbanus tenuicornis Bouček 1970.

Diagnosis.—The only *Norbanus* species having the postmarginal vein much shorter than the marginal vein (cf. Fig. 3). Basal

cell completely bare. Very minute species (usually less than 2 mm) with long and slender antennae.

Distribution.—Canary Islands, China, Italy (Noyes 2003). Previously not recorded for Spain (mainland).

Biology.—Unknown.

Material examined.—**Type material.** **NHM**: 'Italia: Ortovero nr. Albenga, 5.X.69 Bouček', 'Holotypus ♀ *Norbanus tenuicornis* Bouček 1970', 'Presented to BMNH 1974, Z. Bouček', 'B.M. TYPE HYM 5.2329'. **Additional material.** **NHM**: 6♀ 'N. *tenuicornis* Bčk, ♀, Z. Bouček det. 1975' (1♀ det. 1973), 'Italy, Cerialle nr Albenga, 3.IX.72 Bouček'; 2♀ 'N. *tenuicornis* Bčk, ♀, det. Z. Bouček 1975', 'Villasimius, S. Sardinia, VI.75 Bouček'; 6♀ 'N. *tenuicornis* Bčk. ♀, det. Z. Bouček 1975' (1♀ det. 1973), 'Spain: Castellón, Benicasim, 13–15.VI.73 Bouček'; 1♀ 'N. *tenuicornis* Bčk, ♀, det. Z. Bouček 1975', same locality, 22–24.VI.74 Bouček; 3♀ 'N. *tenuicornis* Bčk. ♀, det. Z. Bouček 1975' (1♀ det. 1974), 'Spain (Murcia): Sra. de Espuña, nr. Totana, 20.VI.1973 Z. Bouček BM 1973-312'; 2♀ 'N. *tenuicornis* Bčk, ♀, det. Z. Bouček 1975', 'Spain: Murcia, nr Manzarrón, 21.VI.1973, Z. Bouček BM 1973-312'; 3♀ 'N. *tenuicornis* Bčk, ♀, det. Z. Bouček 1975' (1♀ det. 1973), 'Spain: Malaga, nr. Nerja, 23.VI.1973 Z. Bouček BM 1973-312'; 1♀ 'N. *tenuicornis* Bčk, ♀, det. Z. Bouček 1975', 'Spain (Malaga): Estepona, 29–30.VI.74 Z. Bouček'; 1♀ 'tenuicornis', 'Spain (Malaga): Estepona, 29–30.VI.74 Z. Bouček', 'BM 1974-321'; 1♀ 'N. *tenuicornis* Bčk., ♀, det. Z. Bouček 1975', 'Spain: Granada, La Herradura, 24.VI.1973, Z. Bouček BM 1973-312'; 1♀ 'tenuicornis', same locality, 2.VII.74 Z. Bouček, BM 1974-321.

Subgenus *Picroscytoides* Masi
***Norbanus (Picroscytoides) calabrus* (Masi)**
(Figs 2, 8, 16)

Picroscytus calabrus Masi 1942.

Norbanus calabrus (Masi 1942), Szelényi (1974).

Picroscytoides albiventris Bouček 1969, Bouček (1990).

Norbanus (Picroscytoides) calabrus (Masi 1942), Dzhanokmen (1999).

Diagnosis.—The female of this rather robust species can be distinguished from all the other species of the subgenus

mainly by its strongly developed quadrangular lamina at the base of the gena (cf. Fig. 16). The male is quite similar to that of *N. (P.) guyoni*, but differs in its longer antennae and gaster coloration.

Distribution.—Azerbaijan, Croatia, Czech Republic, Italy, France, Kazakhstan, Serbia, Slovakia, Tadzhikistan, Turkey, Turkmenistan (Noyes 2003); Bulgaria, Ukraine (Bouček 1969). Unknown for Cyprus before this study.

Biology.—Unknown.

Material examined.—**Type material.** GNHCM: 1♂ 'Holotype', 'Picroscyctus (Masioscyctus) calabrus n. sp. typus!', 'subg. Masioscyctus, secondo Széleányi (1941)', 'Soveria mannelli (Cal. Sila) 20-VI-29 C. Confalonieri', 'Museo Civico di Genova'. NHM: 1♀ 'Sandanski, Bulgaria m. Kourek, 28.V.67', 'Paratypus ♀, Picroscyctoides albiventris Bouček'; 1♂ 'Slovakia mer. Kamenica n/Hr. Bouček 23.7.63', 'Paratypus ♂ Picroscyctoides albiventris Bouček'; 1♂ 'Biograd na m. Jugoslavia, Bouček 14.VII.68', 'Paratypus ♂ Picroscyctoides albiventris Bouček'; 1♂ same information, 19.VII.68. **Additional material.** NHM: 2♀ 'albiventris Bčk', 'Norbanus calabrus (Masi), det. Z. Bouček 1996', 'M. de V. Graham, France: B. du Rhône, Fonscolombe, 16.VIII.90'; 2♀ 'Picroscyctoides sp.', 'Cyprus: Limassol., 12.V.1934, G.A. Mavromoustakis BM 1935-55', 'British Museum Loan No. 7214'; 1♀ same information, 1.VI.1934; 26♂ 'Picroscyctoides albiventris Bčk, det. Z. Bouček 1975', 'Villasimius, S. Sardinia, VI.75 Bouček'; 6♂ 'Norb. calabrus (Masi), det. Z. Bouček 1986', 'M. de V. Graham, France: B. du Rhône, Fonscolombe, 16.VIII.90'; 1♂ 'Norbanus guyoni Gir ♂', 'Norbanus calabrus (Masi), det. Z. Bouček 1986', 'Mte Vergine, Avellino, 2.IX.54'. The following specimens are part of Graham's collection, bearing the same registration label: 'M. W. R. de V. Graham coll., BMNH(E) 1995-489': 1♀, 1♂ 'France, B du Rhone, Fonscolombe, 14.VIII.1986; 1♀ same locality, 17.VII.1986; 2♀ same locality, 17.VII.1990; 3♀, 15♂ same locality, 16.VIII.1990; 1♂ same locality, 10.VII.1986; 1♂ same locality, 5.VI.1985; 1♂ same locality, 7.VII.1990; 1♂ same locality, 7.VIII.1990; 1♂ same locality, 26.VII.1983; 1♀ 'France: Hérault betw. Soubes and Grandmont, 16.VIII.1975'; 1♀ same locality, 24.VIII.1975; 1♂ 'France: Vaucluse nr. Bédoin,

11.VIII.1986; 1♂ 'France: Vaucluse St. Pierre de Vassols, 6.VIII.1976'; 1♂ 'France: Gard Vic, nr. Blauzac, 22.VII.1977'.

**Norbanus (Picroscyctoides) cerasiops
(Masi)**

(Figs 12, 17)

Picroscyctoides cerasiops Ruschka in Masi 1922 (see the notes on the species author).

Norbanus cerasiops (Masi 1922), Bouček (1990).

Norbanus (Picroscyctoides) cerasiops (Masi 1922), Dzhankmen (1999).

Diagnosis.—The species is close to *N. (P.) obscurus*. Both sexes differ from it in their body coloration; the female also differs in having the antennae ending without a clear spicula and the male in having the antennae (pedicellus plus flagellum) shorter than head width (cf. Fig. 12, 17).

Distribution.—Croatia, Cyprus, Czech Republic, France, Hungary, Italy, Kazakhstan, Republic of Moldavia, Morocco, China, Romania, Serbia, Slovakia, Spain, Turkey (Noyes 2003); previously unrecorded for Greece and Madeira.

Biology.—This species is known to be a primary parasitoid of various Curculionidae (Coleoptera): *Larinus planus* (F.), *L. turbinatus* Gyllenhal, *Lixus brevirostris* Boheman, *L. cardui* Olivier, *L. juncii* Boheman, *L. scabricollis* Boheman (Noyes 2003). Possibly it also acts as a secondary parasitoid through various other parasitic wasps such as *Bracon intercessor* Nees (Braconidae) or *Eurytoma* sp. (Eurytomidae) (Graham 1969). In this study it is recorded for the first time as a parasitoid of *Lixus ascanii* (L.) on *Crambe tatarica* Sebeok.

Notes on the species author.—In his paper of 1922, Masi clearly attributed this species to Dr. F. Ruschka, from whom he received a specimen labelled "*Cerasiops mediterraneus* g. et sp. n.". He recognized this individual as a conspecific of his own *N. cerasiops* specimens and congeneric of *N. obscurus*, described by Masi himself in the same paper (*sub Picroscyctoides obscurus* Masi 1922). Believing "*Cerasiops*" unsuit-

able as a genus name for his *N. obscurus*, he described the new genus *Picroscytoides* and changed the name of Ruschka's species in *P. cerasiops* (Ruschka) (Masi 1922, p.151). The paternity of the species is clearly attributed by Masi to Ruschka also in the description, in which the name *Picroscytoides cerasiops* is followed by "(Ruschka) in litt." (Masi 1922, p. 154). However, since Ruschka did not satisfy the criteria of availability, i.e. he did not publish a description of his new species, the authorship of this species belongs to Masi.

Material examined.—**Type material.** GNHCM: 1♂, 'Syntype', 'Picroscytoides cerasiops Masi, 1922', 'Is. Giglio, VII-1902, G. Doria', 'Museo Civico di Genova'; 3♂ same locality; 1 antenna 'Syntype', 'Antenna di Picroscytoides cerasiops Ms. ♂ Is. Giglio'. **Additional material.** NHM: 1♀ 'Norbanus (P.) cerasiops (Masi), Dzhankmen, 23.VI.80' [in Russian]; 1♀ same data, 17.VI.80; 1♂ same data, 8.VI.80; 4♀ 'Picroscytoides cerasiops Masi, Zd. Bouček det. 1975', 'Villasimius, S. Sardinia, VI.75 Bouček', 'BM 1975-280'; 1♀ 'Picroscytoides cerasiops Rusch. [sic], det. Z. Bouček 1980', 'Greece: Thessalia Nr. Kalambaka Pinios riverbed, 14–20.VII.1979, BM 1979-312, M.C. Day, G.R. Else, D. Morgan'; 1♀ 'Picroscytoides cerasiops Masi, det. Z. Bouček 1974', 'Spain (Malaga): Ronda, 1.VII.1974 Z. Bouček'; 1♀ 'Picroscytoides cerasiops Masi, det. Z. Bouček 1974', 'Spain (Malaga): Estepona, 29–30.VI.74 Z. Bouček'; 1♀ 'cerasiops Masi', 'Picroscytoid.', 'Spain (Madrid): El Pardo, 10.VII.1974 Z. Bouček'; 2♀, 4♂ 'Picroscytoides cerasiops Masi, Ch. Ferriere det.', 'Morocco, Rabat, VII.1936, M. Bremond, Ex. larva of Lixus No. 3', 'Pres. by Imp. Inst. Ent., BM 1937-132'; 1♂ 'Cyprus: Limassol., 29.V.1934 G.A. Mavromoustakis, BM 1935-55', 'British Museum Loan No. 7214'; 1♂ 'Picroscytoides', 'Cyprus: Zakaki, 5.VII.1934 G.A. Mavromoustakis, BM 1935-55', 'British Museum Loan No. 7214'; 1♀ 'Picroscytoides cerasiops Masi, Ch. Ferriere det.', 'Cyprus: Limassol., 15.V.1921 G.A. Mavromoustakis', 'Pres. by Imp. Inst. Ent., BM 1929-43', '1♀ 'Mallorca, Magaluf, 3-9.7.1975 K.M. Guichard'; 3♂ 'cerasiops', 'Spain (Granada): La Harradura, 2.VII.74 Z. Bouček', 'BM 1974-321'; 2♂ same locality, 24.VI.1973, 'Z. Bouček, BM 1973-312';

1♂ 'Spain: Toledo, 6.VII.1974, Z. Bouček', 'BM 1974-321'; 1♂ 'Spain: Murcia, Sra. de Espuña nr. Totana, 20.VI.1973', 'Z. Bouček, BM 1973-312'. The following specimens are part of Graham's collection, bearing the same registration label: 'M. W. R. de V. Graham coll., BMNH(E) 1995-489': 2♀ 'cerasiops', 'sp. indet. B', 'France: Vaucluse, Dentelles de Montmirail, 15.VII.1974'; 1♀ 'France: Vaucluse, nr. Bèdoin, 23.VII.1984'; 1♀ same locality, 6.VII.1983; 1♂ same locality, 10.VI.1985; 1♀ 'cerasiops R.', 'France: Hérault betw. Soubes and Grandmont, 16.VIII.1975'; 1♀ 'France: B du Rhone, Fonscolombe, 24.VII.1984'; 1♀ same locality, 17.VII.1990; 1♀ 'Madeira: Curral dos Romeiros, 26.VII.1982'. **MICO:** 1♂ 'Norbanus cerasiops (Masi) ♂ det. M. Mitroiu 2005', 'P.N. Măcin, Culmea Pricopanului, capc. Malaise, 23.07.–25.07.04'; 1♂ 'Norbanus cerasiops (Masi) ♂ det. M. Mitroiu 2008', 'ex. Lixus ascanii (L.) in Crambe tatarica, 9.VII.2002', 'Romania, IS, R.N. Valea lui David, leg. M. Mitroiu'.

Norbanus (Picroscytoides) guyoni (Giraud)

Arthrolysis guyoni Giraud 1869.

Picroscytoides guyoni (Giraud 1869), Bouček (1969).

Norbanus guyoni (Giraud 1869), Bouček (1990).

Diagnosis.—The female can be easily separated from all the other species of the subgenus by its large body size (about 1 cm) and its very long and conical, mainly orange, gaster. The male is similar to that of *N. (P.) calabrui*, but differs in its shorter antennae and gaster coloration.

Redescription.—Even if very careful for that time, Giraud's description lacks many details. Types of *N. (P.) guyoni* are probably lost and Masi (1922) considered the species of uncertain validity. Subsequent authors regarded it as a valid species, but no further diagnostic character has been given since its description. So we provide a redescription of both sexes.

Female.—Head black, with slightly metallic reflections; eyes red; scape, pedicellus and second annellus light brown, scape lighter at base; first annellus yellow; the rest of the funicle dark brown, with the

distal part of every segment slightly lighter. Mesosoma cupreous, with greenish reflections; tegulae and venation light brown; legs entirely light brown, the anterior and posterior coxae with darker bases. Gaster with the anterior 2/3 brown-orange and the posterior 1/3 blackish, the latter with slightly metallic reflections; the lateral sides of each gastral segment with diffuse brownish spots. Body length: 11 mm. Head very slightly wider than the mesosoma, width about $2.4\times$ length in dorsal view and $1.35\times$ height in frontal view; POL about $1.2\times$ as long as OOL; temple about $0.4\times$ as long as eye length in dorsal view; eye height about $1.3\times$ length; malar space about $0.8\times$ as long as eye height; gena strongly carinate; head sculpture very superficial, especially the frons; vertex covered with numerous white hairs; lower margin of toruli slightly above lower eye margin; antennal formula: 11262; combined length of pedicellus and flagellum about as long as head width; scape exceeding the vertex, equal to eye height; pedicellus dorsally about $2.1\times$ as long as wide; the first annellus transverse, the second approximately quadrate; all funicular segments (F) longer than wide, F1 length about $3.6\times$ width, F6 about $1.9\times$; clava about as long as F6 plus 1/2 of F5, with a gradually narrowing spicula, the suture slightly evident; F1–F2 with 7 rows of sensillae, F3–F4 with 5 rows, F5–F6 with 4 rows, the claval segments with 3 rows. Mesosoma length about $1.3\times$ width; mesoscutum width about $1.6\times$ length; scutellum width about $1.2\times$ length; propodeum width about $6.2\times$ length in median part, uniformly reticulated; spiracles very large and elongate; callus covered with white dense hairs; anterior wings hyaline and triangular, length about 2.6 width; basal cell and basal vein glabrous; speculum very narrow, under the parastigma and the marginal vein; disc covered with short and dense pilosity; marginal vein : post-marginal vein : stigmal vein = 44 : 31 : 20; stigma not large, pointed distally under

uncus. Gaster conical, length about $4.3\times$ width, about twice as long as head plus mesosoma; posterior margin of the first tergite with 3 lobes; the more intense pigmented areas covered with numerous white hairs.

Male.—Differs from female as follows: green reflections on head and mesosoma stronger; all coxae and femora darker, tibiae yellow; gaster orange with its tip black, without lateral dark spots, ovate and much shorter; antennae thin, with long erect setae and no knots; antennal formula: 11272; combined length of pedicellus and scape about $1.2\times$ as long as head width; temple about $0.3\times$ as long as eye length. Body length: 5 mm.

Distribution.—Algeria (Giraud 1869) (see the notes on type locality and distribution). Previously unrecorded for Libya.

Biology.—Primary parasitoid of *Oecocecis guyonella* Guenée (Lepidoptera: Gelechiidae) (Giraud 1869; Herting 1975).

Notes on type locality and Distribution.—*Norbanus guyoni* has been considered until now as a European and North African species, probably due to a misunderstanding regarding the type locality, which, according to some authors, might include France (Noyes 2003). However Giraud never mentioned France in his paper (Giraud 1869). Instead, comparing *N. scabriculus* to *N. guyoni* he refers to his species as "l'espèce algérienne", and cites *N. scabriculus* as "le seul représentant européen que je connaisse de ces genre" (Giraud 1869, p. 484). He also cites both the host (the Lepidoptera gall maker *Oecocecis guyonella*) and its host plant, *Limoniastrum guyonianum* Dur. ex Boss., stating that he received the galls from Dr. Guyon, member of the Institute of France, who was in Algeria in 1847 (Giraud 1869, p. 476). Today *L. guyonianum* is known as a North-Saharan endemic species. Its describer, Michel Charles Durieu de Maisonneuve, was a French botanist, who in 1840–44 was a member of a committee for scientific exploration of Algeria. Moreover,

apart from *N. guyoni*, Giraud (1869) in his work described four more species emerging from *O. guyonella* galls. The first two were the Braconids *Rhaconotus ollivieri* (Giraud) (= *Hormiopterus ollivieri* Giraud 1869), and *Apanteles gallicolus* (Giraud) (= *Microgaster gallicolus* Giraud 1869), the first of which was named after Dr. Ollivier, an Algerian researcher who collected and sent to Giraud another parcel of galls (Giraud 1869, p. 480). The third was the torymid *Microdontomerus albipes* (Giraud) (= *Callimome albipes* Giraud 1869), for which Grissell (1995) clarified the Algerian origin, and the fourth was *Eupelmus gueneei* Giraud (1869), which together with *N. guyoni* is still considered also an European species, with France as type locality (Noyes 2003). We think that all these elements make clear that all the parasitoids of *O. guyonella* described by Giraud (1869), including *N. guyoni*, are from Algeria originally.

Material examined.—NHM: 1♀ '*Picroscytoidea guyoni* (Giraud), Z. Bouček det. 1972', 'Biskra, Algeria, galls *Limoniastrum guyonianum* ex. 23.IV.1904, Wism. 1910-166'; 2♂ '*Picroscytoidea guyoni* (Giraud), Z. Bouček det. 1973', 'Cyrenaica: Bersis (W of Tocra) 26.VII.1957', 'K.M. Guichard, BM 1957-669'.

***Norbanus (Picroscytoidea) laevis* Bouček**

Picroscytoidea laevis Bouček 1969.

Norbanus laevis (Bouček 1969), Bouček (1990).

Norbanus (Picroscytoidea) laevis (Bouček 1969), Dzhanokmen (1999).

Diagnosis.—According to Bouček (1969), this species can be easily recognized by its long pilosity and the obliterated sculpture of the head and mesosoma. Although no material was available for our study, Bouček's description clearly differentiates this species from other *Norbanus*.

Distribution.—Azerbaijan, Kazakhstan, Uzbekistan (Bouček 1969; Dzhanokmen 1999).

Biology.—Primary parasitoid of *Myelois cinctipalpella* Christ (Lepidoptera: Pyrali-

dae) on *Carthamus tinctorius* L. (Asteraceae); also associated with *Ferula songorica* Pall. ex. Spreng. (Apiaceae) (Bouček 1969).

***Norbanus (Picroscytoidea) obscurus* (Masi)** (Figs 14, 15, 20, 21)

Picroscytoidea obscurus Masi 1922.

Norbanus obscurus (Masi 1922), Bouček (1990).

Norbanus erdoesi (Szelényi 1974); **syn. n.**

Norbanus (Picroscytoidea) obscurus (Masi 1922), Dzhanokmen (1999).

New synonymy.—Comparing the types of *N. obscurus* (Masi) and *N. erdoesi* (Szelényi) as well as additional specimens of *N. obscurus*, we could not find any constant differences between the two species. Thus we consider *N. erdoesi* to be a junior synonym of *N. obscurus*.

Diagnosis.—This species is close to *N. (P.) cerasiops* and *N. (P.) calabrus*. From the former, both sexes differ in their body coloration; the female also differs in its thinner antennae, with clear spicula (cf. Fig. 20), and the male in having the antennae with pedicellus plus flagellum longer than head width. From the latter, both sexes differ mainly in lacking a strongly developed lamina at the mouth corner (cf. Fig. 15); the male also differs in having wide antennal segments, without whorls of long setae (cf. Fig. 21).

Distribution.—Azerbaijan, ex Czechoslovakia, Croatia, Germany, Hungary, Italy, Kazakhstan, Macedonia, Romania, Serbia, Spain, Turkey, Ukraine (Noyes 2003). Newly recorded from Algeria, France, Hungary, Russia, and Syria.

Biology.—Primary parasitoid of *Cephus pygmaeus* L. (Hymenoptera: Cephidae) in stems of Gramineae (Szelényi 1974). Also associated with stems of *Halogeton* (Amaranthaceae) (Dzhanokmen 1999).

Material examined.—**Type material.** GNHCM: 1♀ 'Paralectotype', '*Picroscytoidea obscurus* Ms. Cotype! ♀♂', 'Is. Giglio, VII-1902, G. Doria', 'Museo Civico di Genova'; 2♂ '*Picroscytoidea obscurus* Masi PLT det. Z. Bouček, 1990', same locality and data. HNHM: 1♀ 'Holotypus

Picroscytoidea erdoesi Szélényi ♀, 'Hym. Typ. No. 4246 Mus. Budapest', 'Hungarian Natural History Museum Hymenoptera Coll. Budapest', '*Picroscytoidea erdoesi* sp. n. Det. Dr. Szélényi', '7988', 'Ex *Cephus pygmaeus*', 'Békásmegyer 16.VIII.1956 leg. Dr. Szélényi'; 1♀ '*Paratypus Picroscytoidea erdoesi* Szél. ♀, 'Hym. Typ. No. 4248 Mus. Budapest', 'Hungarian Natural History Museum Hymenoptera Coll. Budapest', '*Picroscytoidea erdoesi* sp. n. Det. Dr. Szélényi', '8560', 'Ex larva *Cephus pygmaeus*', 'Debrecen 10–30.VII.1957 leg. Koppány'. **Additional material.** **NHM:** 1♀ '*Picroscytoidea obscurus* Masi', 'Turkey: Amasya, 30 km. Amasya-Mecitozu, 1.VIII.1960. 3.000', 'Guichard and Harvey, BM 1960-364'; 1♂ 'Stood under *Picroscytoidea* sp.', same data; 1♂ '*Norbanus obscurus* Masi det.?', same data; 1♀ '*Picroscytoidea obscurus* Masi, det. Z. Bouček 1987', 'Spain, Sevilla Carmona, V.1987, Sp. 172.5 ex', 'Cephidae on wheat, CIE A19167'; 1♀ '*Picroscytoidea obscurus* Masi, det. Z. Bouček 1978', 'Algeria: Tadjerouna, V.1943', 'K.M. Guichard, BM 1945-39'; 1♀ '*Picroscytus scabricula* Nees, Ch. Ferrière det.', '20.VI.1927', 'South Russia, Sent by Rostov-on-Don Agric. Exp. Sta. / Pres. by Imp. Inst. Ent., BM 1928-54'; 6♂ '*Picroscytoidea* ?obscurus Masi, det. J.S. Noyes 1989', 'Syria: Tel Hadya, VII–IX.1988, R.H. Miller #5', 'ex *Cephus pygmaeus* on wheat'. The following specimens are part of Graham's collection, bearing the same registration label: 'M. W. R. de V. Graham coll., BMNH(E) 1995-489': 1♀ '*obscurus* (Masi)', 'France: B du Rhone, Fonscolombe, 14.VI.1986'; 1♀ same locality, 2.VI.1987; 1♀ same locality, 4.VIII.1986; 1♀ 'France: Drôme, Col de Macuègne, 1.VIII.1979; 1♀ same locality, 7.VIII.1975; 1♀ 'v. near Fonscol. No. 93', '? *Obscurus* Masi', 'France: Gard S. of Alès, Domessargues, roadside, 27.VII.1974'; 1♀ 'France: Aveyron, Gorges du Trévézel, 10.VIII.1975'; 1♂ 'France: Dordogne, Thomas nr. Allas, 5.VIII.1974'; 1♂ 'France, Vaucluse Roussillon, 9/8/79, M. de V. Graham'. **MICO:** 1♀, 1♂ '*Norbanus obscurus* (Masi), det. M. Mitroiu 2008', 'Romania, CT, R.N. Agigea, 9.VII.2000, leg. I. Popescu'; 1♀ '*Norbanus obscurus* (Masi) ♀, det. M. Mitroiu 2008', 'Romania, IS, R.N. Valea lui David, 13.08.2000, leg. M. Mitroiu'.

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